

ABSTRACT OF THE DISCLOSURE

A MOS or CMOS based photoconductor on active pixel image sensor. Thin layers of semi-conductor material, doped to PIN or NIP photoconducting layers, located above MOS and/or CMOS pixel circuits produce an array of layered photodiodes. Positive and negative charges produced in the layered photodiodes are collected and stored as electrical charges in the MOS and/or CMOS pixel circuits. The present invention also provides additional MOS or CMOS circuits for reading out the charges and for converting the charges into images. With the layered photodiode of each pixel fabricated as continuous layers of charge generating material on top of the MOS and/or CMOS pixel circuits, extremely small pixels are possible with almost 100 percent packing factors. MOS and CMOS fabrication techniques permit sensor fabrication at very low costs. In preferred embodiments all of the sensor circuits are incorporated on or in a single crystalline substrate along with the sensor pixel circuits. Techniques are disclosed for tailoring the spectral response of the sensor for particular applications.